

73rd MORSS CD Cover Page

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During Operation Iraqi Freedom

Revised title: Selected Results from the Navy-Marine Corps Combat Trauma Registry
During Operation Iraqi Freedom

Presented in (input and Bold one): (**WG23** , CG____, Special Session ____, Poster, Demo, or Tutorial):

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Selected Results from the Navy-Marine Corps Combat Trauma Registry During Operation Iraqi Freedom

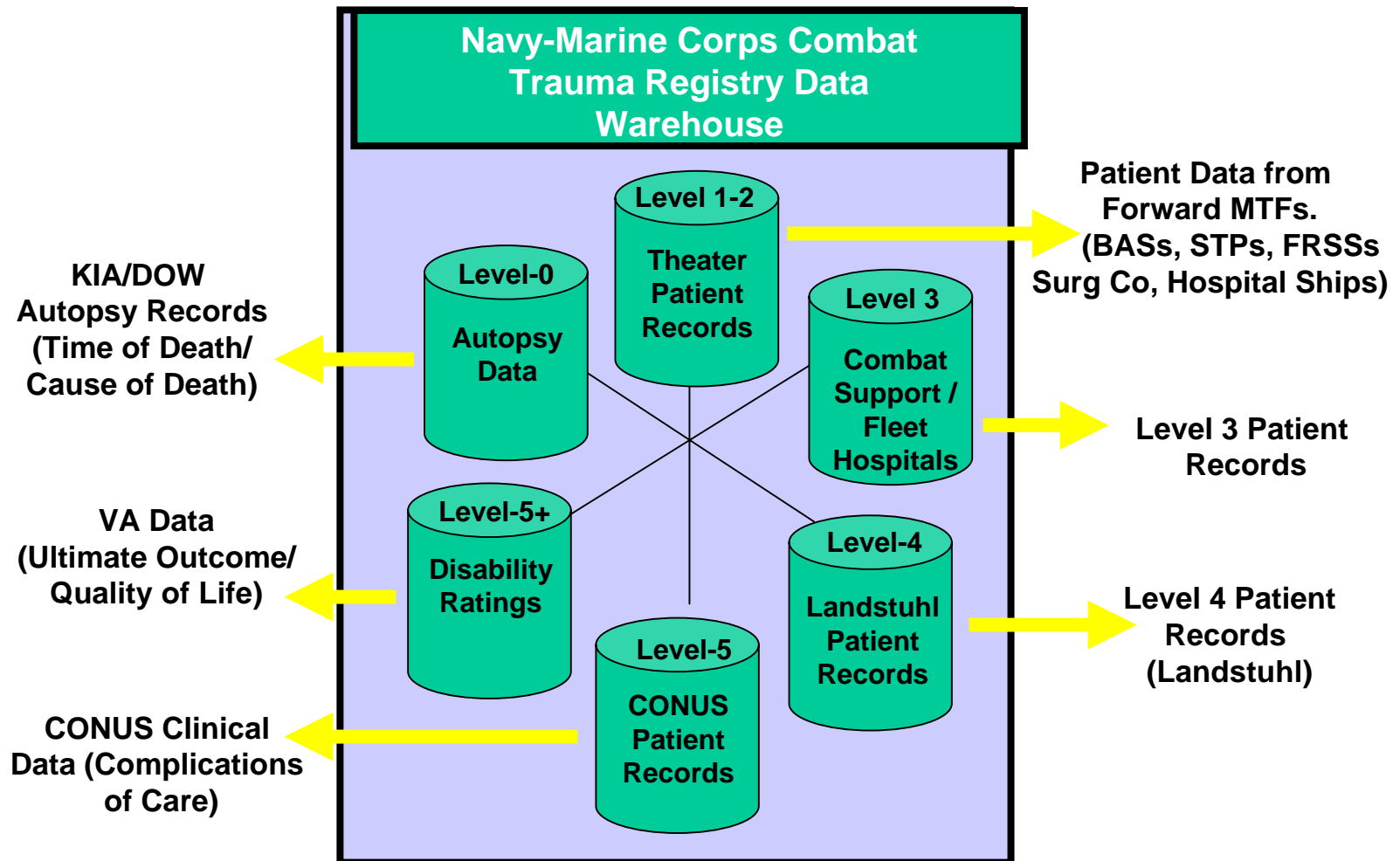
Jay Walker – Mike Galarneau
Naval Health Research Center

Navy-Marine Corps COMBAT TRAUMA REGISTRY
Naval Health Research Center San Diego, CA



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Navy – Marine Corps Combat Trauma Registry



12,000+ Completed Forms Currently Received by the Naval Health Research Center

MEDCOM Test Form 1381, JAN 2004/NHRC Revised 2-04[illegible]

Theater Medical Registry Record – Demographic Information

Bravo Surgical Co.,
FRSS3/STP7,
2/2 BAS, etc.

Facility Type: ☐ Base-X
☐ GP ☐ CBPS ☒ Hard Bldg

Al Asad, Korean
Village, Blue Diamond,

Doe, John B.

123 45 6789

Theater Medical Registry Record

MTF Designation: []	Location: []	Facility Type: <input type="checkbox"/> Base-X <input type="checkbox"/> GP <input type="checkbox"/> CBPS <input checked="" type="checkbox"/> Hard Bldg	Casualty Name (Last, First MI): []	Casualty SSN: [] - [] - []
MTF Casualty Received From: []		Rank: []	Date of Birth: []	Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female
Unit: []				

Date/Time of Injury: [] DDMMYY/TIME	Date/Time Arrived: [] DDMMYY/TIME
--	--

Prefer Military Rank vice
Paygrade: 1st LT, Tech
Sgt, Airman, PO4, etc.

22 JUN 1988

☒ Male ☐ Female

3/10, 2D Recon Bn,
MWSS-273, etc.

11NOV04/1520,
27 APR 04/1945

Field, 2D LAR BAS,
FRSS2/STP4, etc.

Theater Medical Registry Record – Protective Gear

Protection:	Not Worn	Worn	Struck	Penetrated
<input type="checkbox"/> UNK				
Helmet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eye Wear: Wiley-X <input type="checkbox"/> / ESS <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flak Vest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceramic Plate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Axillary/Deltoid protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lower extremity protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other: _____ (Face, Ears, etc...)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Identify any additional protective equipment worn by patient in this section.

Theater Medical Registry Record – Vitals / Treatments

Vitals:			
Time	<input type="text"/>	<input type="text"/>	<input type="text"/>
Pulse	<input type="text"/>	<input type="text"/>	<input type="text"/>
Temp	<input type="text"/>	<input type="text"/>	<input type="text"/>
B/P	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>
Resp	<input type="text"/>	<input type="text"/>	<input type="text"/>
SpO2	<input type="text"/> %	<input type="text"/> %	<input type="text"/> %
Tx & Procedures:			
Sedated	<input type="text"/>		
Chem Paralyzed	<input type="text"/>		
Intubated	<input type="text"/>		
CRIC	<input type="text"/>		
Needle Decompr	<input type="text"/>		
Chest Tube	<input type="checkbox"/> L side <input type="checkbox"/> R side <input type="checkbox"/> Blood <input type="checkbox"/> Air		
I/O Line	<input type="text"/>		
Colloid (HTS/Albumin)	<input type="text"/> ml		

Since only 3 ()
somewhere n

Crystalloid (LR/NS) Other: <input type="text"/>	<input type="text"/> ml
Tourniquet	Time on <input type="text"/> Time off <input type="text"/>
Collar/C-Spine	<input type="text"/>
Hemostat (e.g. Quick Clot)	<input type="text"/>
Oxygen	<input type="text"/> Liters/min.
RBC	<input type="text"/> units
FFP	<input type="text"/> units
CRYO	<input type="text"/> units
Plts	<input type="text"/> Packs
HBOC	<input type="text"/> ml
Walking Blood Bank	<input type="text"/> units
EXT Fixation (location)	<input type="text"/>
Long Bone Splint	<input type="text"/>

initial,

Theater Medical Registry Record – Injury Descripton, OR/Vent/ICU

Illustrate injuries by drawing.

INJURY Description (Location, nature and size in cm.) Be specific – Enter free text type in gray box, 500 character maximum

Use standard medical abbreviations and terms

AB Abrasion
 AMP Amputation
 AV Avulsion
 BL Bleeding
 B Burn
 Deform Deformity
 ECC Ecchymosis
 FB Foreign Body
 H Hematoma
 LAC Laceration
 PW Puncture Wound
 P Pain
 FX Fracture
 SS Seatbelt Sign
 SW Stab Wound
 GSW Gun Shot Wound

Date and Start/Stop times

OR Start DDMMYY/TIME
 Stop DDMMYY/TIME

Vent On DDMMYY/TIME
 Off DDMMYY/TIME

CU In DDMMYY/TIME
 Out DDMMYY/TIME

Provider:

Specialty:

Date: DDMMYY/TIME

Medical Visit: ☐ Sick Call ☐ Trauma

Treatment: ☐ Initial ☐ Follow-Up

Specify Sick Call or Trauma

Specify Initial or Follow-up

Theater Medical Registry Record – Discharge Summary Information

Region	<input type="checkbox"/> Discharge Summary Information (Diagnosis, Procedures and Complications)
Head & Neck (incl. C-Spine)	<input type="text"/>
Chest (incl. T-Spine)	<input type="text"/>
Abdomen (incl. L-Spine)	<input type="text"/>
Upper Extremities	<input type="text"/>
Pelvis	<input type="text"/>
Lower Extremities	<input type="text"/>
Skin	<input type="text"/>
Damage Control Procedure? <input type="checkbox"/> Y <input type="checkbox"/> N Hypothermic? <input type="checkbox"/> Y <input type="checkbox"/> N Coagulopathy? <input type="checkbox"/> Y <input type="checkbox"/> N Class of Hemorrhage: I <input type="checkbox"/> II <input type="checkbox"/> III <input type="checkbox"/> IV Shock? <input type="checkbox"/> Y <input type="checkbox"/> N	

Short explanation of diagnosis, procedures performed, and/or complications.

 Each field has 350 character limit in Word document format

Damage Control Procedures: Emergent, non-definitive surgical procedure generally performed at an FRSS or Surgical Company

Wounded in Action (WIA)
Length of Stay by Disposition
Bravo Surgical Co. April 3 – May 11, 2003

Length of Stay	Return to Duty	Air Evac	Ground Evac	Morgue *	Total	%
1 Hour or Less	1	6	-	-	7	3.5%
1 to 6 Hours	2	59	4	2	67	33.8%
6 to 12 Hours	-	40	-	1	41	20.7%
12 to 24 Hours	3	68	-	1	72	36.4%
24 to 48 Hours	-	8	-	1	9	4.5%
Unknown Duration	2	-	-	-	2	1.0%
Total	8	181	4	5	198	100%

Non-Battle Injury Patients (NBI)
Length of Stay by Disposition
Bravo Surgical Co. April 3 – May 11, 2003

Length of Stay	Return to Duty	Air Evac	Ground Evac	Total	%
1 Hour or Less	34	6	5	45	20.3%
1 to 6 Hours	35	34	1	70	31.5%
6 to 12 Hours	-	35	-	35	15.8%
12 to 24 Hours	4	43	-	47	21.2%
24 to 48 Hours	5	14	-	19	8.6%
48 to 72 Hours	1	1	-	2	0.9%
72 to 96 Hours	2	-	-	2	0.9%
Unknown Duration	2	-	-	2	0.9%
Total	83	133	6	222	100%



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Disease Patients (DIS)
Length of Stay by Disposition
Bravo Surgical Co. April 3 – May 11, 2003

Length of Stay	Return to Duty	Air Evac	Ground Evac	Total	%
1 Hour or Less	53	2	-	55	24.7
1 to 6 Hours	61	16	1	78	35.0%
6 to 12 Hours	5	11	-	16	7.2%
12 to 24 Hours	24	24	1	48	21.5%
24 to 48 Hours	13	8	-	21	9.4%
48 to 72 Hours	2	2	-	4	1.8%
72 to 96 Hours	1	-	-	1	0.4%
Total	159	63	1	223	100%



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**US Navy, Marine Corps and Army
Primary Mechanism for Wounded in Action (WIA) Personnel
Sample of April 2004 – May 2005**

Primary Mechanism of Injury	WIA	Percent
IED	457	37.5 %
Fragments (Unspecified)	189	15.5%
Gunshot Wounds (GSW)	183	15.0%
Blast	106	8.7 %
Mortar	102	8.4 %
RPG	48	3.9 %
Mine	17	1.4 %
Motor Vehicle	14	1.1 %
Blunt Trauma	13	1.1 %
Grenade	12	1.0%
Fall	10	0.8%
Burns	9	0.7%
Aircraft Accident	5	0.4%
Other/Not Stated	53	4.3%
Total	1218	100.0 %

Service	WIA	%
Marines	933	76.6%
Army	183	15.0%
Navy	48	3.9%
Air Force	1	0.1%
Not Recorded	53	4.4%
Total	1218	100.0%



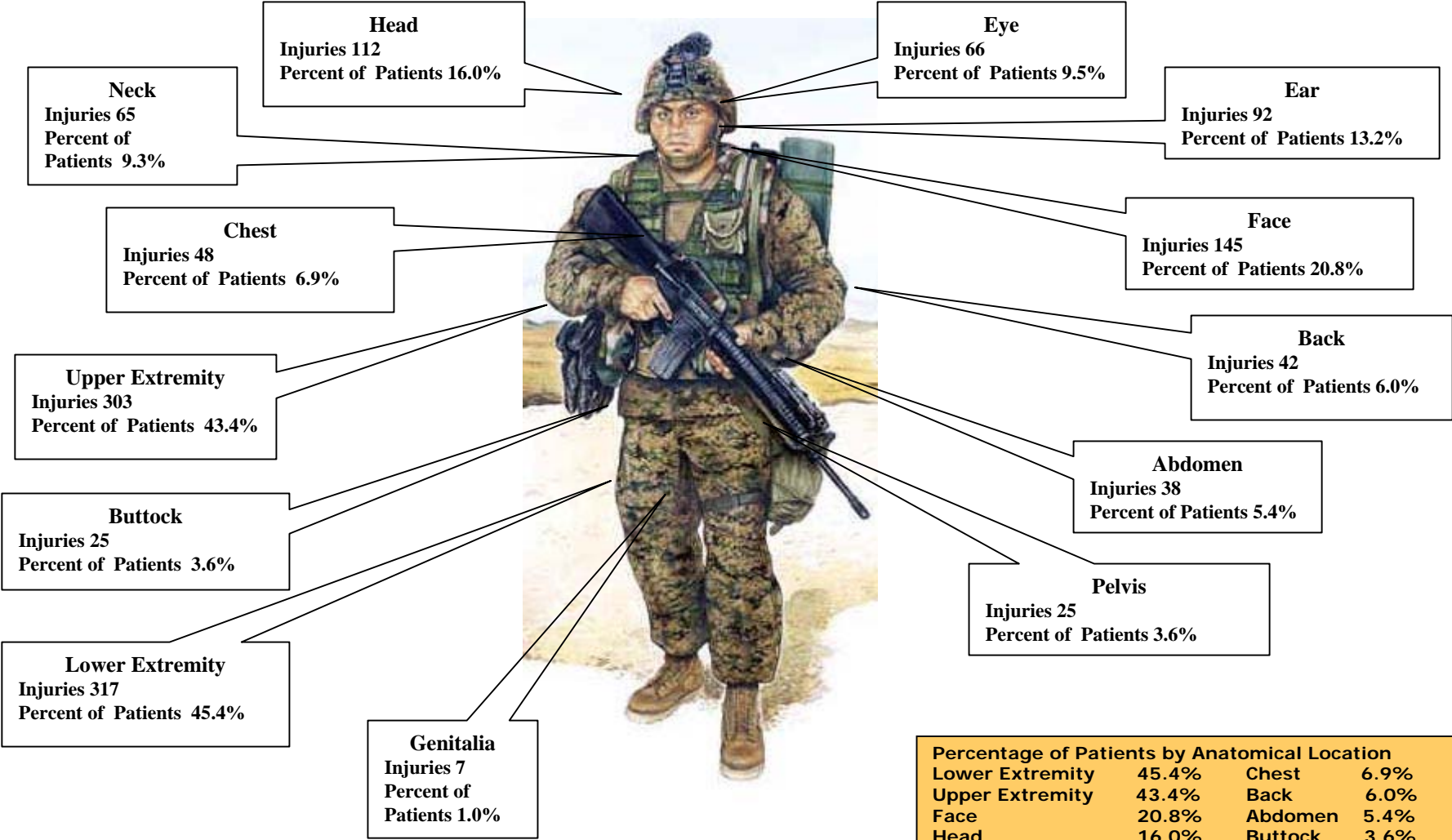
Anatomical Location of Injury

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**US Navy, Marine Corps and
Army - WIA only**
Sample of April 2004-May 2005

Total Patients* 698 / Total Injuries 1285



*Number of clinically assessed patients

**US Navy, Marines and Army
Wounded in Action
Primary Mechanism of Injury by
Anatomical Location
Sample of April 2004– May 2005**

*Percentages below will not add up to 100% due to injuries to multiple anatomical locations.

Primary Mechanism of Injury	Clinical Assess.
IED	278
Fragments (Unspec.)	105
Gunshot Wounds	111
Blast	38
Mortar	73
RPG	37
Mine	8
Motor Vehicle	10
Blunt Trauma	0
Grenade	7
Fall	9
Burns	4
Aircraft Accident	4
Other/Not Stated	14
Totals	698

IED - 278 Patients, 601 Locations (2.16 Locations/Patient)

Head 60 21.6% of IED Patients

<u>Face</u> 88 31.7%	Chest 15 5.4%	Back 17 6.1%	Buttock 11 4.0%
<u>Eye</u> 46 16.5%	Upper 135 48.6%	Pelvis 6 2.2%	Genitalia 2 0.7%
<u>Ear</u> 65 23.4%	Lower 111 39.9%	<u>Neck</u> 31 11.2%	Abdomen 14 5.0%

Fragments - 105 Patients, 159 Locations (1.51 Locations/Patient)

Head 7 6.7% of Fragment Patients

Face 11 10.5%	Chest 7 6.7%	Back 5 4.8%	Buttock 3 2.9%
Eye 3 2.9%	Upper 52 49.5%	Pelvis 5 4.8%	Genitalia 0 0.0%
Ear 3 2.9%	Lower 48 45.7%	Neck 11 10.5%	Abdomen 4 3.8%

GSW 111 Patients 151 Locations (1.36 Locations/Patient)

Head 5 4.5% of Gunshot Wound Patients

Face 13 11.7%	Chest 9 8.1%	<u>Back</u> 8 7.2%	Buttock 5 4.5%
Eye 2 1.8%	Upper 35 31.5%	Pelvis 5 4.5%	Genitalia 1 0.9%
Ear 3 2.7%	Lower 52 46.8%	Neck 4 3.6%	<u>Abdomen</u> 9 8.1%

Mortar 73 Patients 135 Locations (1.85 Locations/Patient)

Head 20 27.4% of Mortar Patients

Face 8 11.0%	<u>Chest</u> 9 12.3%	Back 5 6.8%	Buttock 3 4.1%
Eye 2 2.7%	Upper 25 34.2%	Pelvis 3 4.1%	Genitalia 1 1.4%
Ear 5 6.8%	<u>Lower</u> 43 58.9%	Neck 7 9.6%	Abdomen 4 5.5%

RPG 37 Patients 78 Locations (2.11 Locations/Patient)

Head 3 8.1% of RPG Patients



Face 8 21.6%	Chest 1 2.7%	Back 1 2.7%	<u>Buttock</u> 2 5.4%
Eye 2 5.4%	<u>Upper</u> 24 64.9%	<u>Pelvis</u> 5 13.5%	<u>Genitalia</u> 1 2.7%
Ear 5 13.5%	Lower 20 54.1%	Neck 4 10.8%	Abdomen 2 5.4%



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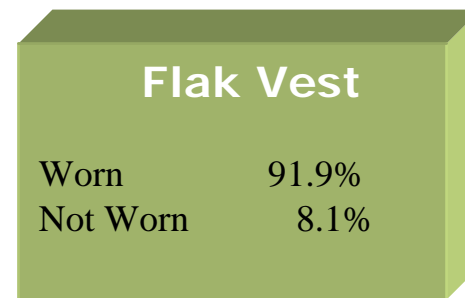
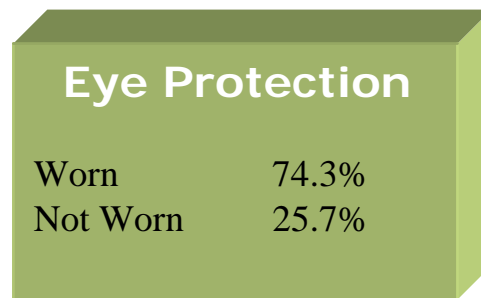
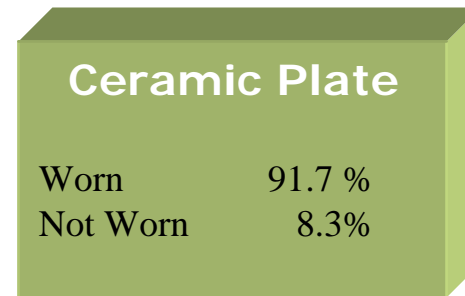
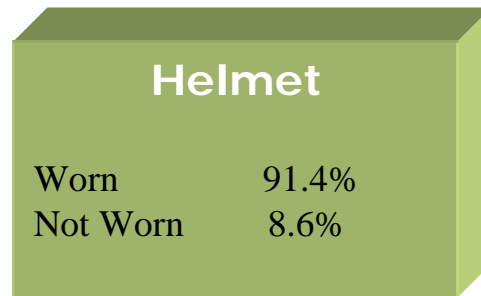
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Protective Gear Status Captured by the Combat Trauma Registry

	Worn	Not Worn
Hit and killed	X	X
Hit and wounded		
Hit and not wounded (protected)	X	
Not Hit	X	X

US Navy, Marine Corps and Army WIA Casualties Wearing Protective Equipment at Time of Injury

Sample of April 2004- May 2005



Patients = 1218

Primary Mechanism of Injury by Use of Protective Gear (Helmets, Flak Vests, Ceramic Plates) for US WIA

Mechanism of Injury	Not Wearing	Wearing
Mortar/Rocket	30.1%	4.9%
Blast (unspec)	25.2%	7.5%
Fragment	17.5%	15.5%
IED	7.8%	41.9%
RPG	4.9%	4.1%
Fall	2.9%	0.7%
Gunshot Wound	1.9%	16.3%
Other	9.7%	9.1%
Total	100.0%	100.0%
n-size	103	937

Surgical Procedures by Casualty Type

Sample of WIA and NBI Patients April 2004 – May 2005

Wounded in Action (WIA) Surgical Patients n=334		
Level II Surgical Procedures	# of Procedures	% of Surgical Patients*
Irrigation & Debridement	236	70.7%
Exploratory Laparotomy	49	14.7%
Tissue Exploration	48	14.4%
External Fixation	37	11.1 %
Orthopedic Exploration	32	9.6 %
Chest Tube	26	7.8%
Fasciotomy	22	6.6 %
Vascular Ligation	22	6.6 %
Fracture Reduction	15	4.5 %
Amputation	13	3.9 %
Vascular Shunt	12	3.6 %
Colon Resection	11	3.3 %
Thoracotomy	8	2.4 %
Surgical Airway	3	0.9%
Other	5	1.5%
Total Procedures	539	

Non-Battle Injury (NBI) Surgical Patients n=29		
Level II Surgical Procedures	# of Procedures	% of Surgical Patients*
Irrigation & Debridement	17	58.6 %
Fracture Reduction	11	37.9%
Tissue Exploration	4	13.8%
Orthopedic Exploration	3	10.3%
External Fixation	1	3.4%
Amputation	1	3.4%
Chest Tube	1	3.4%
Exploratory Laparotomy	1	3.4 %
Vascular Repair	1	3.4 %
Total Procedures	40	

***Percentages will not add up to 100% due to multiple surgical procedures per patient.**



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Theater Data Collection Resources

Iraq CTR Registrars

In contact with all theater MTFs & providers.
Copies X-rays from theater digital radiography units.
Troubleshoots data collection issues & provide training.

Iraq CTR Help-Desk

ctr@nhrc.navy.mil

Provides immediate contact between providers, Iraq registrars
and the Naval Health Research Center

Web-Based Navy-Marine Corps CTR Form

<https://fieldmedical.mtstech.com/jsf-ctrform/ctrf/ctr.jsp>



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Secondary Data Sources

Marine Corps Personnel Casualty Reports (PCRs)

Provide event details not available from Clinical Records

Digital Radiography Images

Identified in I & II MEF FRAGO that all films go to NHRC

Over 2000 films received from OIF-2

Radiologist interpreting images for incorporation into CTR



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Current Initiatives

Head/Neck/Face Injury Study

Extremity Injury Study

Injury Scoring

Injury Severity Score (ISS)
Abbreviated Injury Scale (AIS-2005)
ICD-9.

Scaling Systems for Organ Specific Injuries

To be Used in Addition to Injury Severity Scoring Systems.
Will Provide Clinical Frames of Reference for Comparing Injury Levels.
Selected Scaling Systems for Navy-Marine Corps CTR

Liver Injury Scale.
Eye Injury Scale.
Mangled Extremity Severity Score.
Colon Injury Scale.
Kidney Injury Scale.



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Dr. John Labanc Oral, Maxillofacial Clinical Advisor

Dr. Marlene DiMaio- Orthopedics Clinical Advisor

Dr. Mike Mazurek Orthopedic Surgery Clinical Advisor

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Pending Neuro Surgery Clinical Advisor

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